

I may unhesitatingly state that free selection presents one of the *most difficult practical problems a surveyor has to meet*; but that on the plains of Canterbury, it is encountered under the *best advantages*, and under the fewest objections. Here, with due care in always preceding section or allotment surveys by standard points at sufficiently close distances, the problem might have been and may be worked out, economically and professionally, in a satisfactory manner. But when we leave the plains in any part of the colony the case is otherwise. It is true that while applications are confined to the valleys in hilly and mountainous countries, and their frontages alone pegged, free selection may be correctly administered to in survey; but immediately this initiatory process is passed, and back applications have to be marked on the ground, the surveyor encounters insurmountable difficulties. The disorganized state of the surveys in Banks Peninsula is an example of what occurs.* The objections have been so apparent to the Wellington Waste Land Board that that body now refuses to sell before survey.† In Nelson so impossible has it been found to map and record the ubiquitous applications there made, that Crown titles have actually been granted, the whereabouts *being unknown*. This state of matters, of course can only be temporarily admitted in any of the provinces, and the example of the Wellington Waste Land Board perforce—sooner or later—must be followed.

The cause of the difficulties entailed by free selection in hilly country is not far to seek. The applications being of different areas have various depths denoted to them by law. Thus, however easily their front corners in the valleys may be apportioned, their back corners fall upon all possible positions; seldom on the tops of the ridges, where they would be useful, but either in a gully or on the face of a precipice—ninety-nine times in the hundred in places least desirable and often quite inaccessible—hence the inaccuracies and complications that have arisen, and which affect so large a portion of the work done in the colony.‡

Spotting surveys, then, in hilly and mountainous country, bear the same objections as does the American system of squares§—corners of sections being arbitrarily fixed independently of natural features—and should give place to a system which recognises these and apportions the locations, properties, and lines of access in harmony with the valleys, spurs, and ridges—not counter to all.

The cost of surveys being a political rather than a professional subject, I need say little on this head, further than to remark that the cost of free selections increase with dispersiveness and minuteness. Thus in Westland, where the “spotting” claims of gold-fields largely affect the charge, the rate is 22s. 9½d. per acre; in Nelson, where any applicant may have a survey, however inaccessible, by depositing 6d. per acre, the cost to Government has been 6s. 0½d.; while in Canterbury, where the same mode has been in operation over a compact and easily accessible district, the rate is not more than 2s. 3½d. per acre; for comparison, block survey, before sale, costing 1s. per acre, as already mentioned.

Of course as the colony grows, the matter of cost will become more and more important, if it is not a serious matter already, and I may observe that fifteen years ago the United States of America even seems to have felt this, for I observe that on the 30th of May, 1862, an Act to reduce expenses of survey and sale was passed by Congress, wherein by Section 10 it was enacted that settlers desiring a township (six square miles) to be surveyed, may apply and deposit estimated cost. Then the Surveyor-General may order a survey, provided it be “within the range of the regular progress of the public surveys, “embraced by existing standard lines or bases for the township and sub-divisional” surveys. Survey to be made by a competent United States Deputy-Surveyor. Settlers depositing cost having no priority of claim or right of purchasing the land, but township, when surveyed, to be subject to the general land laws.

As in New Zealand, the sum per acre received by Government is four to eight times greater than that of the United States, the time when such a contingency as a general measure to be taken may be distant. It may be only useful at present to note that as with them reduction of cost of survey must have as a corollary, curtailment of privileges in selection, though the homestead law of pre-emption of the bonâ fide settler, holding by actual possession, is in no way obstructed, nor need be here if it become authorised policy. We also learn by their example that it will never be advisable to ignore those standard processes, which in this colony have been so generally neglected, and to which must be ascribed at least three-fourths of the complications now existing.

VI.—MEASURES FOR COMING SEASON.

The rapid and correct marking-out of the boundaries for people selecting land, being the first object of a Colonial Survey, in the coming season, the services of the department will continue to be devoted to this. And the key to the several processes being in the establishment of indisputable points at two to three miles distances, the carrying out of this work must be pushed in every direction in which settlement is taking place. There are several modes of doing this duty according to the nature of the country operated on—such as minor triangulation (net-work or ray-trace, transversely or diagonally) major traverse circuit, and “square blocking.” But on inspection of some of the districts, I find the surface so mountainous, precipitous, and impenetrable, that none of these ordinary means are available. I have therefore moved Government to order from England micrometer telescopes for ascertaining distances by small bases; thus “setting out” the work to section surveyors in such places as the sounds, deep gorges, and river-beds of Marlborough, Nelson, and Westland, &c. At present in many such positions, the section surveys are being made at haphazard without connection. This could not go on long without overlapping double granting and other complications, and to control this by the ordinary methods would entail such an enormous expenditure in ascending and clearing mountain tops, as to be quite prohibitory.

By the end of the season the standard work will be so far advanced as to admit of the electric and astronomical observations for determining the initial points of circuits to be commenced. With the view to this object, early after my appointment, I solicited you to move the Government of Victoria to assist us in this by observing for, and furnishing us with, certain astronomical data; a service which their excellently appointed observatory could do in a most perfect manner. On application through the

* See Extract from Mr. Baker's Report. Appendix No. 5.

† Resolution of Waste Land Board, 12th December, 1876.

‡ See General Reports, 26th December, 1874, and 7th December, 1876.

§ J. D. Whitney, “North American Review,” July, 1875.